ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/23562101

A HISTORY OF THE EARLY DAYS OF PERSONALITY TESTING IN AMERICAN INDUSTRY: An Obsession With Adjustment

Article *in* History of Psychology · August 2008

DOI: 10.1037/a0013041 · Source: PubMed

CITATIONS
74

READS
28,000

2 authors:

Robert E Gibby
IBM
15 PUBLICATIONS **423** CITATIONS

SEE PROFILE

Michael J. Zickar
Bowling Green State University
113 PUBLICATIONS **4,516** CITATIONS

SEE PROFILE

All content following this page was uploaded by Michael J. Zickar on 21 October 2015.

The user has requested enhancement of the downloaded file.

History of Psychology
2008, Vol. 11, No. 3, 164–184

Copyright 2008 by the American Psychological Association
1093-4510/08/$12.00 DOI: 10.1037/a0013041

A HISTORY OF THE EARLY DAYS OF PERSONALITY TESTING IN AMERICAN INDUSTRY: An Obsession With Adjustment

Robert E. Gibby
Procter & Gamble, Cincinnati, Ohio

Michael J. Zickar
Bowling Green State University

Objective personality testing began with Woodworth's Personal Data Sheet in 1917. That test was developed to identify soldiers prone to nervous breakdowns during enemy bombardment in World War I (WWI). Soon after, many competing personality tests were developed for use in industry. Many of these tests, like Woodworth's, focused on the construct of employee maladjustment and were deemed important in screening out applicants who would create workplace disturbances. In this article, the authors review the history of these early personality tests, especially the Bernreuter Personality Inventory and the Humm-Wadsworth Temperament Scale, and discuss the implications of personality testers' obsession with the construct of employee maladjustment. In addition, the authors discuss the industry's obsession with emotional maladjustment and how this obsession coincided with a cultural shift in norms relating to cultural expression.

Keywords: personality testing, emotional adjustment, Robert S. Woodworth, industrial psychology

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Personality testing has been an integral part of industrial-organizational (I-O) and vocational psychology for the last 85 years. Since the creation of the first formal personality inventory, the Woodworth Personal Data Sheet (WPDS; Woodworth, 1917), personality testing has endured many controversies, transformations, and threats. Currently, personality testing is viewed as crucial to understanding the overlapping fields of vocational psychology (Tokar, Fischer, & Subich, 1997) and I-O psychology (Hough, 2001). Personality inventories are used in vocational counseling and employee selection and are important components in theoretical models of work behavior. Despite its long history and importance, however, there has been little historical scholarship investigating the early days of personality testing.

In this article, we examine the beginnings of the relationship between personality testing and industry. We document the evolution of personality testing from the 1917 WPDS test up until tests of the 1940s after which personality testing became much more established and commercially accepted. We focus on

Robert E. Gibby, Procter & Gamble, Cincinnati, Ohio; Michael J. Zickar, Department of Psychology, Bowling Green State University.

Sources from various archives were used in writing this article. We use simplified notation to document the various collections from which these materials were obtained. WVDB refers to the Walter VanDyke Bingham papers located at Carnegie Mellon University. AHAP refers to the Archives of the History of American Psychology located at University of Akron.

Correspondence concerning this article should be addressed to Robert Gibby, Procter & Gamble, 2 P&G Plaza, Cincinnati, OH 45202. E-mail: gibby.re@pg.com

the obsession that personality test developers (and their managerial consumers) had with the construct of adjustment while they ignored other aspects of personality that are now viewed as important for predicting work-related behavior. We trace the roots of this obsession by highlighting the writings of Elton Mayo, as well as other managerial gurus who thought that the key to success in American industry was to root out the "problem employees." In addition, we highlight how this obsession with adjustment and emotions in the workplace coincided with a general cultural change regarding emotional expression.

Although we feel that documenting the history of personality testing for industry is worthy by itself as an academic exercise, we believe reviewing this history is important in understanding the current practice of personality testing. We note that such lessons may be especially pertinent to researchers using present adjustment-oriented personality variables, such as neuroticism, integrity, and core self-evaluations.

Precursors to Modern Personality Measurement

Although philosophers had been interested in personality and temperament throughout the history of intellectual thought, the first formal objective measure of personality owes it origin to World War I (WWI) when American military personnel were interested in the emotional stability of new military recruits. Prior to that, however, philosophers and thinkers had long categorized individuals along different dimensions that would relate to personality as conceptualized today. For example, Galen (130–200) conjectured that individuals differed in temperament due to a prevalence of different types of body fluids. Sir Francis Galton, in his study on heredity genius, mailed out surveys to eminent scholars and asked them to describe their temperament using Galen's typology, asking whether they were "distinctly nervous, sanguine, bilious, or lymphatic?" (Galton, 1874, pp. 199–200). In another approach, Franz Joseph Gall (1758–1828) promulgated the idea that differences in temperament were due to the shape of individuals' skulls. Gall and other phrenologists measured personality using a variety of devices such as calipers (see van Whye, 2004). These precursors to modern personality measurement attempted to understand and measure individual temperament, although the measurements were crude and based on theories that have since been discredited.

The first formal personality test, the WPDS, was developed in an era (1910–1920s) in which psychologists were concerned with improving the measurement of psychological phenomena and they were also beginning to become concerned with developing scientific-based applications that would benefit society. With regard to the first trend of concern for measurement, research in the United States focused initially on the assessment of intellectual assessments. Psychologists like Henry Goddard, Lewis Terman, J. McKeen Cattell, Edward L. Thorndike, and Robert Yerkes developed tests of individual differences such as intelligence, achievement, and sensory skills; these tests were thought to be useful in assessing student potential as well as military potential after the "Great War" broke out (see Zenderland, 1998). With regard to applying psychology, psychologists such as Hugo Münsterburg, Walter van dyke Bingham, and Walter Dill Scott worked with industry to create applications that could be useful for organizations. Applied

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

psychology got a major boost when psychologists worked in various capacities with the American military and government to develop rating forms used to evaluate military personnel as well as entrance exams that helped evaluate the intellectual fitness of new recruits as well as assess their specialized trade knowledge (see Koppes, 2007; Napoli, 1981). It would be these efforts during WWI that would lead to the development of the first objective personality inventory.

Shell Shock and WWI

During WWI, a large number of Allied soldiers, when threatened with enemy bombardment for the first time, experienced long-lasting traumatic symptoms previously associated with psychopathology. The symptoms reported by soldiers after bombardment included nausea, uncontrollable weeping, night shakes, heart palpitations, and amnesia. These symptoms, when experienced after bombardment, were termed "shell shock," and largely rendered soldiers unfit for military duty (Mott, 1917; Salmon, 1917). At the conclusion of the war, the number of victims of shell shock were estimated to be 800,000 British, 800,000 French, and 15,000 American solders (Hale, 1995). Considering such a large number of military casualties associated with shell shock, the military decided to commission a test that could be used to identify soldiers among the American Expeditionary Services who were emotionally unstable, and therefore unfit for active combat service in the U.S. Army (Woodworth, 1919, 1932; see also Goldberg, 1971).

The test that resulted from this concern was the scale of Psychoneurotic Tendencies (PT), developed by Robert S. Woodworth (Woodworth, 1919). Woodworth, a Columbia University student of James McKeen Cattell, had been influenced by his mentor's interest in mental tests and the applications of quantitative methods to psychology. After graduating, Woodworth worked at a variety of universities, including Columbia, Bellevue Hospital Medical College, the University of Edinburgh, and the University of Liverpool, finally settling down to an instructor position at his alma mater Columbia, where he worked until his retirement. During WWI, the American Psychological Association asked Woodworth to develop a test to measure emotional stability. Woodworth and colleagues examined case studies of patients with neurotic symptoms and interviewed psychologists and psychiatrists who had experience with such patients. Based on these interviews and analyses, Woodworth collected a set of neurotic symptoms and administered the set to a group of individuals without neurotic tendencies, eliminating items that had high frequency among the "normal" individuals. After that initial analysis, he administered the test to 1000 recruits as well as a small group of "diagnosed abnormal subjects." The results were submitted to the Surgeon General who decided to use the test on a trial basis for preliminary screening of recruits. When a particular recruit indicated a number of unfavorable symptoms, it was recommended that a military psychiatrist interview the at-risk recruit in more detail. Although the test was developed too late to be used for operational screening of recruits during the war effort, Woodworth publicized the test to other psychologists (see Poffenberger, 1962; Woodworth, 1932, for details about the development of the WPDS).

After the war, Woodworth adapted the test for industrial research, renaming

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

the test the Woodworth Personal Data Sheet (WPDS). The 1924 version of the WPDS assessed personal adjustment via 75 yes/no items; example items included "Do you ever get so angry that you see red?" and "Do you get tired of people easily?" As noted by Ferguson (1952), "this test can be called the grandfather of all present-day personality tests" (p. 146). As might be expected for a test designed initially to identify shell shock, the WPDS focused on the level of psychoticism or personal maladjustment of the respondent. This concentration on the negative end of personality set a precedent that would hinder efforts to find validity for personality traits in the workplace. In the short term, however, managers obsessed with rooting out undesirable and unstable workers found the WPDS and its derivative tests useful.

The Obsession With Adjustment

Nearly all of the popular personality inventories prior to the 1950s focused on the negative and maladaptive aspects of personality (e.g., X-O Tests for Investigating the Emotions, Pressey & Pressey, 1919; the Colgate Tests of Emotional Outlets, Laird, 1925; the Mental Hygiene Inventory, House, 1927; and the Personality Schedule, Thurstone, 1930). In the summaries of the tests, writers described maladaptive aspects of personality as involving "lack of emotional control" and "emotional instability" (Pressey & Pressey, 1919) and used clinical sounding terms such as psychasthenoid, neurasthenoid, and hysteroid (Laird, 1925). This practice was consistent with management theory promulgated by people such as Harvard Business School professor Elton Mayo and was consistent with the ethos of the 1920s and 1930s. Mayo believed that problems at work were most often due to "mental disintegration" and maladjustment (Mayo, 1923). These maladjusted workers could cause problems by lowering work morale, fomenting workplace violence, and agitating for unions. Mayo's writings were influential in the business world and the psychological community; his work, along with colleagues, at the Western Electric Company's Hawthorne Works facility outside of Chicago provided much fodder for those who thought emotional adjustment was the major cause of problems in the workforce (see Gillespie, 1991 and Trahair, 1984 for more background information on Mayo). As noted by Hersey (1936), "the consistently low emotional states which are symptomatic of unhealthy mental conditions cause lessened production, increased accident rates, lack of cooperation and in many instances group conflicts" (p. 296). One psychologist estimated that 80% of all problem employees had a "quirk or unusual feature" in their personality (Humm, 1943). By identifying these maladjusted people with personality tests, it was thought that productivity would increase and workplace radicalism, which was prevalent in the 1920s and 1930s, could be eliminated (see O'Connor, 1999; Zickar, 2001).

Besides Mayo and other management theorists, support for focusing on emotional adjustment came from the new profession of psychiatry, which was gaining influence in the United States. Around the turn of the 20th century, Adolf Meyer, a Swiss pathologist who came to the United States and worked in hospitals in Illinois, New York, Baltimore, and Massachusetts promulgated the view that mental illnesses, even schizophrenia, were not caused solely by biological defects and could be cured or ameliorated by therapy and talking cures (Lidz, 1966;

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Pressman, 1998). A group of industrial psychiatrists influenced by Sigmund Freud's psychodynamic school and new programs in psychiatry (inspired by Meyer and others) attempted to solve industry's woes with personnel counseling, one of Mayo's inventions in the classic Hawthorne studies (see Highhouse, 1999). Other methods advocated by industrial psychiatrists included role-playing and psychodrama (Franz, 1942; Moreno & Toeman, 1942) along with group sessions where managers discussed work-related problems (Burling, 1954). Although there were many individuals who referred to industrial psychiatry, the number of psychiatrists employed in industry appears to be small; one estimate from 1954 was that less than 25 psychiatrists were employed in industry (Alexander, Caples, Harris, & Coulter, 1954). Another study found that eight corporations hired psychiatrists full-time whereas another 200 hired psychiatrists part-time (Collins, 1960). One of the inspirations was Jacob Moreno who trained in psychiatry in Vienna and developed a group therapy technique while working with prostitutes; although his work on group therapy and psychodrama was conducted in many different settings, it found many advocates in industrial settings (see Borgatta, Boguslaw, & Haskell, 1975). Consistent with psychiatry's focus on helping people with psychopathology, industrial psychiatrists concentrated on helping employees resolve their emotional problems.

Psychiatrists and others concerned with mental health created a new field called *mental hygiene*. Besides dealing with the problems of alcoholism, prison reform, and the insane, mental hygienists pledged to help otherwise psychologically healthy individuals cope with the inevitable hassles and stressors present in the fast-paced society created by the industrial revolution (see White, 1917, pp. 1–3). Mental hygienists were as interested in preventing serious mental illnesses from occurring as they were in curing existing maladies. Laurance Shaffer, in one of the first textbooks on adjustment entitled *The Psychology of Adjustment: An Objective Approach to Mental Hygiene* provided a scientific study of how adjustment problems could influence people in various domains such as education, social work, the family, and the workplace (Shaffer, 1936). Mental hygienists had similar views of the causes of industry's woes as Mayo. For example, Giberson (1937) claimed that maladjustment "is the most subtle of the barriers to efficiency" and "must be carefully considered in employee relations, particularly in those supposedly mal-adjusted routine jobs" (p. 259). Fisher and Hanna (1931) claimed that "a large part of vocational maladjustment and industrial unrest are secondary to, and but a reflection of, emotional maladjustment" (p. vii). Shaffer (1936) claimed that maladjustment influenced turnover, inefficiency, job dissatisfaction, workplace bullying, obsession with routines, and daydreaming. For example, "such [maladjusted] persons are often overdependent and, expecting from their superiors in business the same loving consideration that they received from their parents, are thwarted and emotionally upset when they fail to receive it" (Shaffer, 1936, p. 518).

Given the rapid industrialization of the United States in the post-WWI era and its accompanying problem of new sources and levels of stress and alienation, it is not surprising that mental hygienists and their companion psychiatrists considered industry to be a prime target. During the postwar era, industrial conflict was rampant and fears of strikes and unionization were in the minds of most large business leaders. Militant labor unions, inspired by the "red revolution" in Russia

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

aggressively confronted management using a variety of tactics including strikes, propaganda, and even industrial sabotage. In addition, less radical forms of unionism inspired by the American Federation of Labor and its President Samuel Gompers advocated a form of business unionism that encouraged dialog first (and aggressive action second) with employers over issues of working conditions, wages, and workplace safety. In short, management felt under siege from assertive workers who were willing to challenge their control over the workplace (for an excellent summary of this period see Montgomery, 1979).

Given all of these sources of influence, early industrial psychologists devoted a lot of attention in studying employee adjustment. Industrial psychologist Morris Viteles' influential textbook *Industrial Psychology* devoted a full chapter to The Maladjusted Worker and began that chapter by stating "adjustment at work represents the major objective in using the procedures for selection, training, elimination of fatigue and monotony, and so forth, described in other chapters of this text" (Viteles, 1932, p. 586). Psychologist Rexford Hersey (1932) thought that the emotional life of workers was so important that he spent a year investigating fluctuations in Pennsylvania Railroad employees' moods in both the shop and at home.

This obsession with emotions and problem employees can be viewed as part of a greater societal trend related to emotional expression that began in the 1920s. Historian Peter Stearns argues that a confluence of societal changes resulted in a general cultural shift from the Victorian norms, which treated emotions, such as anger, fear, and guilt, as useful in the context of work and family. For example, aggressive and competitive behaviors, properly directed, were viewed as useful in the work context by writers of the time such as Horatio Alger and the new field of Social Darwinists who viewed the workplace as a battleground in which only the fearless would prosper (see Stearns, 1994, pp. 29–34). Changes in gender norms, participation of fathers in family life, and an increase in consumerism resulted in a cultural shift in which emotions became viewed as undesirable (see Stearns, 1994). Across a variety of sources including child rearing manuals, romance advice columnists, and business literature, Stearns concluded that "this shift in emotional direction means that emotions already admitted as potentially dangerous in the Victorian lexicon now became completely unacceptable. Fear and anger had no positive function in the new schema; rather than being directed, they were to be avoided as fully as possible" (Stearns, 1994, pp. 95–96).

As evidenced by these viewpoints that highlighted the importance of employee maladjustment and emotional expression in general, it seemed logical to develop tests to screen out employees with significant emotional maladjustment prior to entering the workforce. Woodworth's test, which was originally developed to identify soldiers prone to shell-shock, provided initial ammunition for those who believed that the problems of the workplace stemmed from faulty emotional life. Although Woodworth's test was the first objective[1] personality test, several imitators soon developed competing tests that were also designed to measure maladjustment.

[1] By using objective, we refer to the scoring of the test. Objective tests have fixed rules of scoring and hence there is no subjectivity involved in the scoring.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Successors to Woodworth

Unidimensional Tests

Many personality tests followed soon after Woodworth's work, including the X-O Tests for Investigating the Emotions (Pressey & Pressey, 1919), the Colgate Tests of Emotional Outlets (Laird, 1925), the Mental Hygiene Inventory (House, 1927), and the Personality Schedule (Thurstone, 1930). These tests were similar to the WPDS in that they all assessed personality on the dimension of maladjustment or psychoticism. In addition, these tests, with the exception of the X-O Tests for Investigating the Emotions, were to a large degree an amalgamation of their predecessors, including the WPDS which was not copyrighted, as test constructors often created inbred tests by borrowing items and content from previous tests. For example, the instruction manual of the Personality Schedule noted that "it was compiled largely from several shorter lists already published, including Woodworth's Psychoneurotic Inventory, House's monograph on this subject, Laird's list of questions, Freyd's list of introvert and extrovert traits, and Allports' ascendance-submission test" (Thurstone, 1930, p. 1). Although these tests were not widely used in organizational or industrial settings, the historical significance of these tests, and the fact that they influenced later assessments of personality, warrant their discussion.

Viteles (1932) identified the Colgate Personality Inventory, the Thurstone Neurotic Inventory, and the Woodworth-Wells Psychoneurotic Inventory as adjustment-oriented personality tests being used in industry. In addition to use by personnel managers, researchers during the time were publishing results favorable to the early personality tests. To provide a context for how these tests were employed in industry, examples of research with the measures are offered. In an early assessment, Elwood (1927) utilized the Colgate Mental Hygiene Tests to determine whether psychoneuroticism could aid in the selection of careers for nurses. Peck (1936) used the Thurstone Personality Schedule to investigate the adjustment difficulties of women teachers, and concluded that "one third of the women teachers are definitely maladjusted, and one-sixth need psychiatric advice, as judged by the Thurstone Personality Schedule. Only one fifth can be classified as well-adjusted" (p. 414). In addition, Sheddan and Witmer (1939) found that the Thurstone Personality Schedule was useful as an assessment of personal adjustment within a battery of tests for predicting the efficiency of relief and social workers. In general, the tests seemed correlated with criteria that were related to adjustment; there was little published investigation of nonadjustment criteria. This would change once tests that measured additional dimensions were introduced.

Multidimensional Tests

The creation of the Bernreuter Personality Inventory (BPI) by Robert Bernreuter (1931), began a new era in personality testing by combining many of the tests listed above to become arguably the first multidimensional measure of personality. The BPI, along with the Humm-Wadsworth Temperament Scale (HWTS; Humm & Wadsworth, 1934) are especially notable because they expanded the number of personality traits beyond what we would call today neuroticism. In addition, both inventories were actively marketed to industry

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

(especially the HWTS) and were used frequently. Because of their importance in the history of personality testing, we highlight the history of the BPI and the HWTS and examine in depth the tests.

The BPI

The BPI was originally constructed by Robert Bernreuter as part of his dissertation research at Stanford, under the supervision of Lewis Terman (Bernreuter, 1933a). After graduate school, he was hired by Pennsylvania State University to start a school psychology program and psychological clinic for schoolchildren. In its published form, the BPI consisted of 125 items that measured four dimensions: Neurotic Tendency, Self-Sufficiency, Introversion-Extroversion, and Dominance-Submission. Sample items (a yes or no response option was used) include "Do you enjoy spending an evening alone?" and "Do you think that marriage is essential to your present and future happiness?" The test was adapted from the Thurstone Neurotic Inventory, Laird (C2) Introversion Test, Allport Ascendance-Submission Reaction Study, and the Bernreuter Self-Sufficiency Test (Bernreuter, 1933b, 1935). The fact that it borrowed heavily from these tests landed Bernreuter in a bit of trouble with Gordon Allport and the publisher of his Ascendence Submission Test, as they threatened legal action for copyright infringement (see Parker, 1991). In response to a letter sent by Bernreuter apologizing for his naïveté to copyright issues, Allport (June 17, 1931) noted the advantages of Bernreuter's scale over his own: "By using most of our situations you measure the same thing. That is a clear violation. Then by embedding this material in a great deal else that is useful and interesting you make a scale that offers competition, even threatening the major proportion of the market. By reducing the price Stanford Press secures still further advantage. No doubt you offer buyers more for their money" (p. 211; as cited in Parker, 1991). As evidenced in this quote, the fact that the BPI cheaply measured four commonly assessed personality traits made it a popular test. By 1935, it had been refined to measure six personality traits, with self-consciousness and solitariness being included based on the findings of a doctoral dissertation conducted by John Flanagan (Flanagan, 1935; see also Bernreuter, 1935; Bird, 1946; Goldberg, 1971).

As Allport speculated, the BPI enjoyed a tremendous amount of use and popularity from its publication up to the Second World War (WWII). In his review of research utilizing the BPI, Super (1942) noted "the following trends in publication: in 1932, 7 distinct published studies; 1933, 21; 1934, 19; 1935, 23; 1936, 17; 1937, 12; 1938, 18; 1939, 8; and 1940, 8" (p. 95). In addition, these publications displayed the BPI's use in a wide variety of settings. Arthur Murray utilized the BPI to check the extraversion of dance instructors, a Hollywood moviemaker administered the test to screenwriters, and the BPI was used to select house-to-house salesmen, engineers, and other occupations (see Bird, 1946). In a poll of American psychologists of their awareness of 53 vocational tests, Pallister (1936) reported that the BPI was the best-known test. Beane, Carroll, and Habbe (1940) performed another survey of quantitatively focused psychologists concerning their awareness of psychological tests in several categories, one being "Personality and Interest Tests." The unidimensional tests included in their survey

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

were the Thurstone Personality Schedule, the Allport A-S Reaction Study, and the Pressey X-O Tests for Investigation of the Emotions (p. 351). By 1938, all of these unidimensional tests were outranked on preference among quantitative psychologists by the BPI. In addition to being more popular than all other personality measures listed in the poll, the BPI was considered to be the most popular measure in the category of personality and interests tests aside from the Strong Vocational Interest Blank, and tied for third (with the Stanford Revision of Binet-1937) among all surveyed tests. Whyte reported that the test's popularity continued for a while with reports of 1,000,000 sales by the test publisher Stanford University Press in 1953 alone (see Whyte, 1956, p. 190).[2] Bird in 1946 claimed that over 2,000,000 "salesmen, mechanics, college students, hospital patients, and self-curious individuals have chewed pencils over its simple trippers" (Bird, 1946, p. 2).

Considering the popularity surrounding the use of the BPI, it seems ironic that the results of so many studies employing the BPI in industrial investigations prior to and during WWII were negative. In fact, repeated findings showed that the BPI was poor at predicting worker performance. Several studies reported little or no relation between personality scores on the BPI and work-related criteria for salesmen (Dodge, 1938; Otis, 1941), grocers (Hampton, 1941), and cotton mill supervisors (Harrell, 1940). Scores on the BPI were also found to be unrelated to measures of efficiency and only slightly related to work attitudes, including job satisfaction among employees at the Harris Trust and Savings Bank of Chicago (McMurry, 1932). In addition to investigating worker productivity and efficiency, researchers also used the BPI to determine the role personality assessment could play in vocational guidance. The findings investigating this relation, however, were also mixed (Dodge, 1937; Hampton, 1941). The disconnect between sales volume and test validity might be a function of marketing efforts and an initial enthusiasm for testing in industry. It would only be later after cultural criticisms and threat of legal action that tests would be held to higher standards by managers.

Part of the reason for the low validity of the BPI in predicting worker productivity and efficiency may have been its continued focus on adjustment, a focus that carried over into its being scored and used as an assessment of "neurotic tendency" in industry (see McMurry, 1932). Although the test had multiple dimensions (not just general maladjustment), each of these dimensions, apparently, concentrated measurement on the negative or maladaptive end of the continuum. This continued focus is best evidenced by Bernreuter's (1933b) concluding statement, in an article detailing the validity of the BPI, "that the full significance of the [BPI] scores will be understood when the studies of the scores of clinically diagnosed adjustment cases, which are now under way, have been completed" (p. 386). This quotation shows the continued focus of personality researchers and test developers on the maladjusted side of the personality spectrum. According to McMurry (1932), it was this focus that was keeping the BPI and other personality tests from reaching their potential in predicting work-related criteria: "assuming that the subjects have told the truth and that the Bernreuter test provides a somewhat valid index of neurotic tendency, the author suggests that

[2] We attempted to verify the sales numbers with Stanford Press but the records have been destroyed.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

there has been too much emphasis on the significance of neurotic tendency in accounting for work maladjustment, inefficiency and unrest" (p. 201).

Besides the overfocus on adjustment, the BPI suffered from other psychometric issues. According to a progress report issued by the National Research Council's (NRC; 1940) Division of Anthropology and Psychology that detailed the value of the BPI to predict success in aeronautical training, the BPI had been found by researchers to be unreliable, lacking in self-consistency, and incorrect in purporting to measure independent traits that were actually intercorrelated (p. 11), a result previously reported by Flanagan and further researched by St. Clair and Seegers (1937). In addition, the report noted that accumulated research showed the test "to be incapable of differentiating extreme types of mentally abnormal persons from normals" (p. 11). Concern over the test's ability to discriminate among adjusted and maladjusted individuals, combined with the inconsistent results surrounding the BPI and other personality tests of the day led Bennett and Gordon (1944) to state that "it appears that the type of personality test used is of little or no value as part of a battery of tests used in personnel selection, since it will predict neither success nor the attitudes of colleagues" (p. 278).

Considering these negative results and concerns, it seems strange that personality test use in industry grew during this period and tests continued to be developed. Considering the relatively poor results surrounding the BPI's use in industry, many industrial researchers created and began using other personality measures prior to and during WWII. These tests included the Bell Adjustment Inventory (Bell, 1938), various versions of the Guilford-Martin Personality Inventory of Factors (Guilford, 1940; Guilford & Martin, 1943), the Nebraska Personality Inventory, and the Humm-Wadsworth Temperament Scale (HWTS; Humm & Wadsworth, 1934).

The HWTS

The second scale, the Humm-Wadsworth, deserves separate mention because its authors were savvy entrepreneurs who cared not only about the validity of their test but also worked actively to increase its sales potential.[3] Assessing personality on seven dimensions (hysteroid, manic, depressive, autistic, paranoid, epileptoid, self mastery plus a response bias scale) via 318 questions (of which 153 were nonscored "filler"), the HWTS was developed in 1934 as a response to a workplace violence incident in which an unstable employee working in a large company killed his supervisor (Hemsath, 1939). The test was developed based on a theory of personality proposed by Dr. Aaron Rosanoff, who used psychiatric observations to hypothesize that personality could be categorized into four abnormal traits: antisocial, cyclotyhymic (i.e., manic-depressive), autistic, and epileptic (Rosanoff, 1920). Rosanoff believed that "so-called normal" personalities had those four traits in various degrees, though normals were more successful in inhibiting the abnormal tendencies compared to patients that he observed in the Kings Park State Hospital in New York. After working in New York, Dr. Rosanoff became the California State Director of Institutions, where Dr. Humm worked with him for five years. Although test reviewers praised the HWTS for

[3] Bernreuter left marketing up to the BPI's test publisher Stanford University Press.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

being based on a particular theory of personality (and hence could be empirically verified), several reviewers questioned the validity of Rosanoff's theory. For example, Prescott commented "the reviewer feels that the availability of this scale offers a promising opportunity for the scientific evaluation of the truth which may underlie Rosanoff's theory; if the theory has holes in it the scale will not work well with normal subjects" (Prescott, 1938, p. 57). Eysenck commented that the "theory on which it is based is not widely held among psychiatrists or psychologists, and there appears to be little evidence in its favor" (Eysenck, 1949, p. 154).

The test was reported to take 30 to 90 minutes to complete. Sample items included "Do you like to go on blind dates?," "Do you think traffic policemen have the right attitude toward motorists?" and "Do you like movie heroes?" (see "Pegs that fit," 1942). In the 1938 Mental Measurement Yearbook the reported rate was $2.50 for 25 tests or $9 per 100; in addition, each report cost 50 cents. By 1965, the price had gone up to $25 for 25 tests along with $2.50 per 25 answer sheets. Humm maintained strict control over the instrument entering into contractual agreements with users that required a first year fee of $1,350 with a $10 per month fee afterward (in 1965 dollars). Part of the fee covered a two week intensive course that Humm conducted to train personnel managers on the use of the HWTS. Humm also required that the test users submit applications of their use from time-to-time so that he could verify that the instrument was used properly. Trained psychologists had more relaxed requirements (see Glennon, 1965, p. 252). One reviewer noted that a perusal of the Humm Personnel Service office records showed that "over two million scorings have been made for employee selection and appraisal in a wide variety of industries" (Misbach, 1949, p. 90).

There are several reasons for the popularity of the HWTS. To begin, it was arguably the first personality instrument developed directly for application to industry, and was created by researchers that worked in the field of industrial personnel (see Tiffin, 1942). The Humm-Wadsworth team seemed like an ideal combination for the development and marketing of a personality test geared, not just for academic research, but for industrial sales. Doncaster Humm was a graduate of University of Southern California conducting his dissertation (supervised by Dr. George H. Mount) on the heritability of mental disorders using archival data collected from siblings (Humm, 1932). He was a psychologist employed by the Los Angeles Public School system when he gave a presentation on psychology to a group of personnel managers. Guy Wadsworth Jr., a vice-president at the Southern Counties Gas Company of California, was in the audience and asked Humm to help him develop a test to screen potential employees for temperament issues. Wadsworth helped collect validation data sets used to develop the HWTS (personal communication, Jack Petit, January 17, 2003; Taylor, 1942).[4] Wadsworth gave the test credibility among personnel managers in that a successful businessman lent his name and efforts to a psychological test that might otherwise be viewed suspiciously by managers reluctant to embrace psychological testing. Previous tests were developed by psychologists (e.g., Thurstone and Bernreuter) more concerned with measurement issues than business concerns. With the pairing of Humm with Wadsworth, the two combined concern with measurement issues with business acumen. In

[4] Jack Petit is a retired psychologist who was employed by Doncaster Humm and his wife Kathryn Humm to market and develop the HWTS.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

addition, Dr. Humm had no formal academic affiliation and depended on the sales of the HWTS as well as his consulting practice whereas previous test developers had academic positions that provided job security.

Researchers began to use the HWTS because its creators heavily marketed it to industry and organizational settings. Articles written by its authors in personnel management journals, especially in *Personnel Journal*, showcased the worth of the HWTS in allowing the "personnel man" to pick the men he wanted (Wadsworth, 1936), to fit employees to their jobs (Wadsworth, 1937a), and to consult the tests as personnel aids (Wadsworth, 1937b). In addition, articles about the HWTS were published in journals specific to particular industries (e.g., *American Gas Journal*, *Aviation*, *Public Utilities,* and *Sales Management*) as well as outlets in popular magazines such as *Time Magazine* ("Pegs that fit," 1942) and *Readers' Digest* (Taylor, 1942). In fact, the latter article was read by Isabel Briggs and inspired her to create the MBTI. After reading the article, she worked with Edward Hay at the Pennsylvania Company for Banking and Trusts to validate the HWTS. Based on her experiences with the HWTS (and her reading of Jungian psychology), she created the now popular MBTI (see Saunders, 1991).

These marketing articles were not subtle about the worth of the HWTS in industry, as noted in Humm and Wadsworth's (1943) claim that "a knowledge of temperament will predict behavior, and often will forestall undesirable behavior through an understanding of unfortunate tendencies" (p. 315). As evidenced in this quote, it is clear that the message being delivered by the creators of the HWTS emphasized confidence in the ability of the test to determine whether or not applicants and employees were emotionally stable and adjusted. Wadsworth was so confident in the results produced by temperament testing in industry by 1937 that he called for an increase in their use by stating "temperamental tests are probably one of our best aids in smoothing human relationships on the job. There is every reason to believe that they have now developed to a stage where they may safely be widely used in industry for this purpose" (p. 346; Wadsworth, 1937b). In addition, Lockheed Martin's industrial relations manager claimed that "nearly ever time we've made an exception [that is, hired somebody the test rejected], we've regretted it" (Taylor, 1942, p. 15). In addition to the marketing of the HWTS in professional journals and trade literature, there was a full-time staff of psychologists and clerical help that was employed to market the test to industry (Jack Petit, personal communication, January 17, 2003).

As an illustration of the extent to which personality tests were marketed to industry for personnel screening and selection of adjusted employees, it should be noted that Humm also worked very hard to have his test used for screening out neurotic and psychotic soldiers during the drafts of WWII. In a telegram dated March 11, 1941 (AHAP), Humm, on the suggestion of Gordon Allport, asked Walter R. Miles, the Chairman of the NRC's Committee on Problems of Neurotic Behavior, to meet with him personally concerning the identification of psychopaths by the Humm-Wadsworth Temperament Scale. Miles replied to the telegram (in a letter dated March 12, 1941; AHAP) by explaining that "a subcommittee on personality inventory" had been established and that he would refer the matter of incorporating the HWTS to the committee. Upon learning of this committee, Humm immediately provided a copy of the original research on the HWTS and offered his services to Carney Landis, the head of the subcommittee.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Humm's marketing of the HWTS paid off, as the head of the Civil Aeronautics Authority in southern California requested the experimental use of the test (letter dated October 21, 1940; AHAP).

Apparently, personnel departments and industrial researchers also bought into such marketing tactics and began using the HWTS. The *Time Magazine* article mentions that over 2,000,000 workmen within 225 corporations had completed the test ("Pegs that fit", 1942). Unlike the BPI, however, results were generally favorable concerning use of the HWTS. For example, Fulton (1945) found it to be helpful in selection of policemen, and Irwin (1942) noted the test's implementation into the selection procedure of all employees at Lockheed; the company attributed its status as having the lowest turnover (less than 1% per month) in the aircraft industry as due to using the HWTS; the President of Lockheed Robert Gross was an especially strong advocate of the HWTS who completed the exam and was determined to be "temperamentally O.K. for his job" (see Pegs that fit, 1942). Additionally, Mursell (1947) noted that the HWTS "has been found very accurate and helpful in personnel work, for, of the 2,000 cases chosen as being satisfactorily adjusted on the basis of their test showing, very few were later discharged for personality reasons" (p. 251). In these cases, however, the criteria used to validate the HWTS continued to be related to employee adjustment.

A second reason for the success of the HWTS was Humm's aggressive efforts to shape the scientific debate surrounding the HWTS. For example, concerns raised by Dysinger (1939); Dorcus (1944), and Gilliland and Newman (1953) were answered (listed in order) by Humm (1939, 1944) and Humm and Humm (1954) in the same or next possible volume of the journal of the original article. In addition, on at least two occasions, D. G. Humm also attempted to bar articles from being published in professional psychological journals, *Personnel Psychology* and the *Journal of Consulting Psychology*. (see letters June 6, 1950, Jan. 2, 1951, Feb. 14, 1951, AHAP). Although Humm's aggressive efforts to shape the scientific discourse surrounding the HWTS might have alienated him from the journal editors and fellow psychologists, these efforts could have been successful in promoting the HWTS as a valid instrument for industry.

History of Personality Testing and Adjustment Between the 1940s and 1990s

Although the focus of this article is on the early days of personality tests in industry, it is worth a brief discussion of how the personality testing industry changed after that time. This brief review helps better place the early days of personality testing in perspective. Building on tests like the BPI and the HWTS, personality testing changed dramatically in the 1940s and 1950s with the development of several thorough personality inventories that changed the concept of personality testing. The Minnesota Multiphasic Personality Inventory (MMPI), developed by researchers at the University of Minnesota, concentrated on identifying psychopathology, such as schizophrenia, so that the process of clinical diagnosis could be standardized and made more efficient (Hathaway & McKinley, 1943) In addition Raymond Cattell developed the Sixteen Personality Factor (16PF) Questionnaire which was designed to measure 16 personality traits thought to span the spectrum of personality traits identified with factor analytic methodology (Cattell, 1949). In addition to the 16PF,

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

other broad-based personality inventories developed via factor analysis were created during the 1940s and 1950s (e.g., the Guilford-Zimmerman Temperament Survey, Guilford & Zimmerman, 1949; Maudsley Personality Inventory, Eysenck, 1959). Finally, the MBTI was developed in the 1940s based on Jungian typological theory and became quite popular (see Saunders, 1991). The 16PF, MBTI, and the MMPI, through various revisions, remain some of the most widely used psychological inventories and are used in a variety of settings. Most of these inventories, excepting the MMPI, were less tied to the concept of adjustment and maladjustment compared to the previously mentioned inventories.

Like previous inventories such as the HWTS, the MMPI was developed to identify individuals who had adjustment problems (see Buchanan, 1994). The MMPI as originally formulated, however, concentrated measurement on clinical levels of psychopathology such as schizophrenia, psychopathic deviance, hysteria, and paranoia. This focus was different from the previous personality inventories that concentrated on the adjustment and maladjustment of otherwise psychologically healthy individuals. The primary application of the early personality tests was in education and the workplace. The MMPI's initial target group was mental hospital patients. Although the MMPI would later be used for all sorts of purposes, including personnel selection, education counseling, and marriage counseling, the primary application was and still is identification of psychopathology in inpatient and outpatient psychiatric and medical settings (see Graham, 2000).

The 16PF inventory and related factor analytic inventories also had weak ties to the concept of adjustment. These tests measured a broad set of traits of which only a small number could be related to adjustment from an emotional perspective. For example, of the original 16 personality traits measured by the 16PF, only three are related to the aspects of personality assessed by the adjustment inventories. Factor C assessed whether an individual was "affected by feelings" or "emotionally stable," Factor O assessed whether an individual was "placid" or "apprehensive," and Factor Q_4 assessed whether an individual was "relaxed" or "tense." Other traits related to shyness, intelligence, imaginativeness, and shrewdness (Cattell & Eber, 1962). The 16PF and similar tests were often validated against criteria that were unrelated or marginally related to adjustment and maladjustment. For example, the 16PF added predictive validity over an ability test to the prediction of grades in math (Ayers, Bashaw, & Wash, 1969). In addition, scores on the 16PF predicted ratings of performance for police officers (Fabricatore, Azen, Schoentgen, & Snibbe, 1978). Although the 16PF and other related tests were used for predicting adjustment-related criteria, they were often successful in predicting other criteria. This is in contrast to the previous tests which were generally only able to predict criteria related to adjustment.

In the late 1980s and early 1990s, personality testing in industry experienced a resurgence as personality test developers, to a large extent, agreed upon a Big Five taxonomy that included the traits of Openness to Experience, Conscientiousness, Extraversion, Neuroticism, and Agreeableness.[5] The Big Five taxonomy came about based on repeated factor analyses of different personality inventories (most based on personality trait adjectives) and different samples that consistently identified

[5] There is some disagreement over the labels of the Big Five dimensions. For example, some researchers prefer the term "Intellectance" to "Openness to Experience." In addition, acceptance of the Big Five taxonomy, while popular, is not universal.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

five similar factors which explained a large percentage of variance in personality ratings (see Digman, 1996). Meta-analyses using the Big Five personality traits demonstrated that job performance could be predicted from personality (see Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991). Although the Big Five personality traits included Neuroticism, an adjustment-related trait, most of the work-oriented research that followed after the meta-analyses focused on the role of conscientiousness (e.g., Barrick, Mount, & Strauss, 1993; Martocchio & Judge, 1997).

After increasing interest in adjustment within personality psychology that peaked in the 1940s and 1950s, psychologists became less interested in adjustment and more interested in other traits and issues. To illustrate this trend, we tabulated the number of books on psychology in PSYCINFO that had adjustment in the title and compared that to the number of books with personality in the title. As can be seen in Figure 1, the percentage of books related to adjustment (in relation to books on personality in general) increased from the 1930s to the 1950s after which there was a decline. The focus of psychology in general, and personality psychology in specific, moved away from adjustment. This decline might be attributed to the humanistic, feel-good movement that gripped the nation as well as psychology during the 1960s. After the drop during the 1960s, however, there has been a gradual return to adjustment-related issues although the interest in adjustment (as judged by this graph) has not reached the highpoints of the 1940s and 1950s.

Adjustment Returns to Industry

Although Figure 1 displays a recent resurgence in interest on adjustment in the personality literature, it is important to note that work with adjustment-related personality constructs never completely disappeared in industry. As mentioned previously, the adjustment-oriented construct of neuroticism is one of the Big Five factors. In fact, neuroticism has especially enjoyed a great deal of scrutiny among researchers over the past decade. In particular, meta-analytic evidence for the Big Five traits has shown mixed results for the relationship of neuroticism and job performance. For example, Barrick and Mount (1991), in their meta-analysis of the relationship between the Big Five traits and job performance, showed no

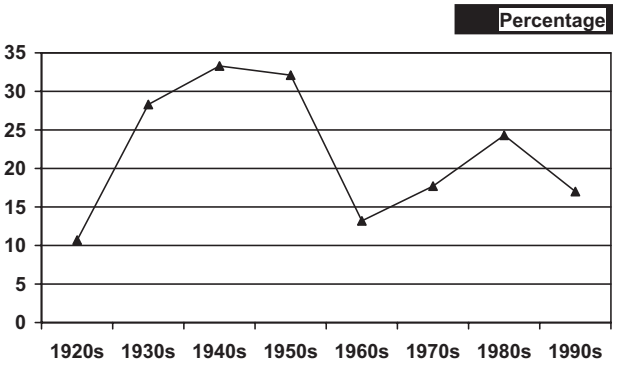

Figure 1. Percentage of books on adjustment, 1920–1999, compared with books on personality.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

relation between these variables, whereas Tett et al. (1991) showed that neuroticism was correlated with job performance in "confirmatory" studies. More recently, Salgado (1997) reported meta-analytic evidence supporting neuroticism as a predictor of job performance. Taking this work into account, it appears that neuroticism, as an adjustment-related construct, will be the subject of further research in personnel research.

In addition to being researched and used as part of the Big Five typology, neuroticism has also been recently reintroduced into the I-O psychology literature as an important component of the core self-evaluation construct (Judge & Bono, 2001; Judge, Locke, Durham, & Kluger, 1997). As noted by Judge et al. (1997), the core-self evaluation construct combines the specific traits of self-esteem, generalized self-efficacy, locus of control, and neuroticism. Despite the fact that neuroticism is only one of the four components of the construct, it is important to note that all of these constructs are highly related (see Judge, Bono, Erez, Locke, & Thoresen, 2002), suggesting that the combination of these traits as the core self-evaluation construct is indicative of a larger adjustment-oriented trait. Research conducted by Judge and Bono (2001) with core self-evaluations has shown impressive relationships between the construct and both job satisfaction ($r = .41$) and job performance ($r = .23$). Based on results like these, it seems likely that continued work with the adjustment-oriented construct of core self-evaluations will continue over the next decade.

In addition to work being performed with neuroticism and core self-evaluations, a great deal of interest over the last decade has existed for personality-based integrity testing to identify potentially problematic employees. As noted by Sackett and Wanek (1996), personality-based integrity tests are closely linked to normal-range personality assessment and measure such constructs as dependability, conscientiousness, social conformity, thrill-seeking, trouble with authority, and hostility (p. 788). As can be seen in this list, it is clear that these personality measures, although not focused directly on the construct of neuroticism, are definitely aimed at screening out and eliminating the problem employee, especially one who may engage in theft.

Although these examples illustrate that emotional stability as a construct is still being researched in I-O psychology, they also display that a great deal has changed since the period prior to WWII, when emotional adjustment was the primary focus of personality psychology. We believe that personality testing has benefited by expanding beyond the initial obsession with emotional adjustment. Today, with the advent of the Big Five typology, integrity testing, and personality related metaconstructs, such as core self-evaluations, it is evident that a great deal of effort has been made to understand how to better assess and relate emotional stability to work-related constructs. Despite the great strides that have been taken to make personality tests, and adjustment-related personality constructs in specific, relevant to industry, it must also be noted that concerns over their use still exist and need to be accounted for by researchers. The good news is that it appears that such concerns will be addressed, as interest in the area of personality based integrity testing, alongside recent interest in the areas of emotion and organizational deviance, promises to fuel research on worker adjustment in I-O psychology over the next decade. Current personality researchers interested in measuring emotions-focused aspects of personality can benefit from a review of the early

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

days of personality testing, when nearly all instruments focused on emotional adjustment.

References

Alexander, F., Caples, W. G., Harris, I. B., & Coulter, T. H. (1954). Human behavior and industry. *Journal of Business, 27,* 38–40.

Ayers, J. B., Bashaw, W. L., & Wash, J. A. (1969). A study of the validity of the Sixteen Personality Factor Questionnaire in predicting high school academic achievement. *Educational and Psychological Measurement, 29,* 479–484.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44,* 1–26.

Barrick, M. R., Mount, M. K., & Strauss, J. P. (1993). Conscientiousness and performance of sales representatives: Test of the mediating effects of goal setting. *Journal of Applied Psychology, 78,* 715–722.

Beane, B., Carroll, J., & Habbe, S. (1940). The Beane poll of favored psychological tests. *Journal of Applied Psychology, 24,* 347–352.

Bell, H. M. (1938). *The Adjustment Inventory.* Stanford, CA: Stanford University Press.

Bennett, G. K., & Gordon, H. P. (1944). Personality test scores and success in the field of nursing. *Journal of Applied Psychology, 28,* 267–278.

Bernreuter, R. G. (1931). *The Personality Inventory.* Stanford, CA: Stanford University Press.

Bernreuter, R. G. (1933a). The theory and construction of the personality inventory. *Journal of Social Psychology, 4,* 387–405.

Bernreuter, R. G. (1933b). Validity of the personality inventory. *Personnel Journal, 11,* 383–386.

Bernreuter, R. G. (1935). *Manual for the Personality Inventory.* Stanford, CA: Stanford University Press.

Bird, C. (1946). *A bit about Robert G. Bernreuter.* Robert Bernreuter files at the Archives of the History of American Psychology, Akron, OH.

Borgatta, E. F., Boguslaw, R., & Haskell, M. R. (1975). On the work of Jacob L. *Moreno Sociometry, 38,* 148–161.

Buchanan, R. D. (1994). The development of the Minnesota Multiphasic Personality Inventory. *Journal of the History of the Behavioral Sciences, 30,* 148–161.

Burling, T. (1954). Psychiatry in industry. *Industrial and Labor Relations Review, 8,* 30–37.

Cattell, R. (1949). *Manual for forms A and B: Sixteen Personality Factor Questionnaire.* Champaign, IL: IPAT.

Cattell, R., & Eber, H. W. (1962). *Manual for forms A and B of the Sixteen Personality Factor Questionnaire.* Champaign, IL: Dorsey Press.

Collins, R. T. (1960). Occupational psychiatry. *American Journal of Psychiatry, 116,* 608–611.

Digman, J. M. (1996). The curious history of the five-factor model. In J. S. Wiggins (Ed.), *The five factor model of personality: Theoretical perspectives* (pp. 1–20). New York: Guilford Press.

Dodge, A. F. (1937). Social dominance of clerical workers and sales-persons as measured by the Bernreuter Personality Inventory. *Journal of Educational Psychology, 28,* 71–73.

Dodge, A. F. (1938). Social dominance and sales personality. *Journal of Applied Psychology, 22,* 132–139.

Dorcus, R. M. (1944). A brief study of the Humm-Wadsworth Temperament Scale and the

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Guilford-Martin Personnel Inventory in an industrial situation. *Journal of Applied Psychology, 28,* 302–307.
Dysinger, D. W. (1939). A critique of the Humm-Wadsworth temperament scale. *Journal of Abnormal & Social Psychology, 34,* 73–83.
Elwood, R. H. (1927). The role of personality traits in selecting a career. *Journal of Applied Psychology, 11,* 199–201.
Eysenck, H. J. (1949). Review of Humm-Wadsworth Temperament Scale. In O. K. Buros (Ed.), *The mental measurements yearbook, third edition* (pp. 87–88). New Brunswick, NJ: Rutgers University Press.
Eysenck, H. J. (1959). *Maudsley Personality Inventory.* London: University of London Press.
Fabricatore, J., Azen, S. P., Schoentgen, S., & Snibbe, H. (1978). Predicting performance of police officers using the Sixteen Personality Factor Questionnaire. *American Journal of Community Psychology, 6,* 63–70.
Ferguson, L. W. (1952). *Personality Measurement.* New York: McGraw-Hill Book Company.
Fisher, V. E., & Hanna, J. V. (1931). *The dissatisfied worker.* New York: The Macmillan Company.
Flanagan, J. C. (1935). *Factor analysis in the study of personality.* Oxford, England: Stanford University Press.
Franz, J. G. (1942). The psychodrama and interviewing. *American Sociological Review, 7,* 27–33.
Fulton, J. L. (1945). A brief statement concerning the effectiveness of the Humm-Wadsworth Temperament Scale. *Psychological Bulletin, 42,* 539.
Galton, F. (1874). *English men of science: Their nature and nurture.* New York: D. Appleton and Company.
Giberson, L. G. (1937). Nervous health in industry. *Personnel Journal, 15,* 255–259.
Gillespie, R. (1991). *Manufacturing knowledge: A history of the Hawthorne experiments.* Cambridge, UK: Cambridge University Press.
Gilliland, A. R., & Newman, S. E. (1953). The Humm-Wadsworth Temperament Scale as an indicator of the "problem" employee. *Journal of Applied Psychology, 37,* 176–177.
Glennon, J. R. (1965). Review of Humm-Wadsworth Temperament Scale. In O. K. Buros (Ed.), *The mental measurements yearbook, sixth edition* (pp. 251–252). Highland Park, NJ: The Gryphon Press.
Goldberg, L., R. (1971). A historical survey of personality scales and inventories. In P. McReynolds (Ed.), *Advances in psychological assessment* (Vol. 2). Palo Alto, CA: Science and Behavior Books.
Graham, J. R. (2000). *MMPI-2: Assessing personality and psychopathology.* New York: Oxford University Press.
Guilford, J. P. (1940). *An inventory of factors S-T-D-C-R.* Beverly Hills, CA: Sheridan Supply Company.
Guilford, J. P., & Martin, H. G. (1943). *The Guilford-Martin personnel inventory.* Beverly Hills, CA: Sheridan Supply Company.
Guilford, J. P., & Zimmerman, W. S. (1949). *The Guilford Temperament Survey: Manual of instructions and interpretations.* Beverly Hills, CA: Sheridan Supply Co.
Hale, N. G., Jr. (1995). *The rise and crisis of psychoanalysis in the United States.* New York: Oxford University Press.
Hampton, P. (1941). A comparative study of certain personality traits and success in retail selling. *Journal of Applied Psychology, 25,* 431–446.
Harrell, W. (1940). Testing cotton mill supervisors. *Journal of Applied Psychology, 24,* 31–35.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Hathaway, S. R., & McKinley, J. C. (1943). *Manual for the Minnesota Multiphasic Personality Inventory.* New York: Psychological Corporation.
Hemsath, M. E. (1939). Theory and practice of temperament testing. *Personnel Journal, 18,* 3–12.
Hersey, R. B. (1932). *Workers' emotions in shop and home.* Philadelphia: University of Pennsylvania Press.
Hersey, R. B. (1936). Psychology of workers. *Personnel Journal, 14,* 291–294.
Highhouse, S. (1999). The brief history of personnel counseling in industrial-organizational psychology. *Journal of Vocational Behavior, 55,* 318–336.
Hough, L. M. (2001). I/Owes its advance to personality. In B. W. Roberts & R. Hogan (Eds.) *Personality psychology in the workplace* (pp. 19–44). Washington, DC: APA.
Humm, D. G. (1932). Mental disorders in siblings. *American Journal of Psychiatry, 89,* 239–283.
Humm, D. G. (1939). Dysingers' critique of the Humm-Wadsworth Temperament Scale. *Journal of Abnormal & Social Psychology, 34,* 402–403.
Humm, D. G. (1943). Skill, intelligence, and temperament. *Personnel Journal, 43,* 80–90.
Humm, D. G. (1944). Discussion of Dorcus' study of the Humm-Wadsworth Temperament Scale. *Journal of Applied Psychology, 28,* 527–529.
Humm, D. G., & Humm, K. A. (1954). Discussion of Gilliland and Newman's "The Humm-Wadsworth Temperament Scale as an indicator of the 'problem' employee." *Journal of Applied Psychology, 38,* 131–132.
Humm, D. G., & Wadsworth, G. W., Jr. (1934). The Humm-Wadsworth Temperament Scale: Preliminary report. *Personnel Journal, 12,* 314.
Humm, D. G., & Wadsworth, Jr., G. W. (1943). Temperament in industry. *Personnel Journal, 21,* 314–322.
Irwin, R. R. (1942). Lockheed's full testing program. *Personnel Journal, 21,* 103–106.
Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—Self-esteem, generalized self-efficacy, locus of control, and emotional stability—With job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86,* 80–92.
Judge, T. A., Bono, J. E., Erez, A., Locke, E. A., & Thoresen, C. J. (2002). The scientific merit of valid measures of general concepts: Personality research and core self-evaluations. *The psychology of work: Theoretically based empirical research.* Mahwah, NJ: Erlbaum.
Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1997). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology, 83,* 17–34.
Koppes, L. L. (Ed.). (2007). *Historical perspectives in industrial and organizational psychology.* Mahwah, NJ: Erlbaum.
Laird, D. A. (1925). Detecting abnormal behavior. *Journal of Abnormal and Social Psychology, 20,* 128–141.
Lidz, T. (1966). Adolf Meyer and the development of American psychiatry. *American Journal of Psychiatry, 123,* 320–332.
Martocchio, J. J., & Judge, T. A. (1997). Relationship between conscientiousness and learning in employee training: Mediating influences of self-deception and self-efficacy. *Journal of Applied Psychology, 82,* 764–773.
Mayo, E. (1923). The irrational factor in human behavior: The "night-mind" in industry. *Annals of the American Academy of Political and Social Sciences, 110,* 117–130.
McMurry, R. N. (1932). Efficiency, work-satisfaction and neurotic tendency: A study of bank employees. *Personnel Journal, 11,* 201–210.
Misbach, L. (1949). Review of Humm-Wadsworth Temperament Scale. In O. K. Buros

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

(Ed.), *The mental measurements yearbook, third edition* (pp. 89–90). New Brunswick, NJ: Rutgers University Press.
Montgomery, D. (1979). *Workers' control in America.* Cambridge, UK: Cambridge University Press.
Moreno, J. L., & Toeman, Z. (1942). The group approach in psychodrama. *Sociometry, 5,* 191–194.
Mott, F. W. (1917). Mental hygiene in shell-shock, during and after the war. *Journal of Nervous and Mental Disease, 65,* 467–488.
Mursell, J. L. (1947). *Psychological testing.* New York: Longmans, Green, & Co.
Napoli, D. S. (1981). *Architects of adjustment: The history of the psychological profession in the United States.* Port Washington, NY: Kennikat Press.
O'Connor, E. S. (1999). The politics of management thought: A case study of the Harvard Business School and the Human Relations School. *Academy of Management Review, 24,* 117–131.
Otis, J. L. (1941). Procedures for the selection of salesmen for a detergent company. *Journal of Applied Psychology, 25,* 30–40.
Pallister, H. (1936). American psychologists judge fifty-three vocational tests. *Journal of Applied Psychology, 20,* 761–768.
Parker, J. D. A. (1991). *In search of the person: The historical development of American personality psychology.* Unpublished doctoral dissertation, York University.
Peck, L. (1936). A study of the adjustment difficulties of a group of women teachers. *Journal of Educational Psychology, 27,* 401–416.
"Pegs that fit." (1942, July 24). *Time Magazine,* pp. 78–79.
Poffenberger, A. T. (1962). Robert Sessions Woodworth: 1869–1962. *The American Journal of Psychology, 75,* 677–689.
Prescott, D. A. (1938). Review of Humm-Wadsworth Temperament Scale. In O. K. Buros (Ed.), *The nineteen thirty eight mental measurements yearbook* (pp. 56–57). New Brunswick, NJ: Rutgers University Press.
Pressey, S. L., & Pressey, L. W. (1919). "Cross-out" tests with suggestions as to a group scale of the emotions. *Journal of Applied Psychology, 3,* 138–150.
Pressman, J. D. (1998). *Last resort: Psychosurgery and the limits of medicine.* Cambridge, United Kingdom: Cambridge University Press.
Rosanoff, A. J. (1920). A theory of personality based mainly on psychiatric experience. *Psychological Bulletin, 17,* 281–299.
Sackett, P. R., & Wanek, J. E. (1996). New developments in the use of measures of honesty, integrity, conscientiousness, dependability, trustworthiness, and reliability for personnel selection. *Personnel Psychology, 49,* 787–829.
Salgado, J. F. (1997). The five factor model of personality and job performance in the European Community. *Journal of Applied Psychology, 82,* 30–43.
Salmon, T. W. (1917). *The care and treatment of mental diseases and war neuroses in the British Army.* New York: War Work Committee of the National Committee for Mental Hygiene.
Saunders, F. W. (1991). *Katharine and Isabel: Mother's light, daughter's journey.* Palo Alto, CA: Consulting Psychologists Press.
Shaffer, L. F. (1936). *The psychology of adjustment.* Boston: Houghton Mifflin.
Sheddan, B. R., & Witmer, L. R. (1939). Employment tests for relief visitors. *Journal of Applied Psychology, 23,* 270–279.
Stearns, P. N. (1994). *American cool: Constructing a twentieth-Century emotional style.* New York: New York University Press.
Super, D. E. (1942). The Bernreuter Personality Inventory: A review of research. *Psychological Bulletin, 39,* 94–125.
Taylor, F. J. (1942). Fitting the worker to the job. *Readers' Digest, 40,* 12–16.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of job performance: A meta-analytic review. *Personnel Psychology, 44,* 703–742.
Thurstone, L. L. (1930). A neurotic inventory. *Journal of Social Psychology, 1,* 3–20.
Tiffin, J. (1942). *Industrial Psychology.* New York: Prentice Hall, Inc.
Tokar, D., M., Fischer, A. R., & Subich, L. M. (1997). Personality and vocational behavior: A selective review of the literature, 1993–1997. *Journal of Vocational Behavior, 53,* 115–153.
Trahair, C. S. (1984). *The humanist temper: The life and work of Elton Mayo.* New Brunswick, NJ: Transaction.
van Whye, J. (2004). *Phrenology and the origins of Victorian scientific naturalism.* Burlington, VT: Ashgate.
Viteles, M. S. (1932). *Industrial psychology.* New York: Norton.
Wadsworth, G. W., Jr. (1936). How to pick the men you want. *Personnel Journal, 14,* 330–335.
Wadsworth, G. W., Jr. (1937a). Fit employees to their jobs. *Personnel Journal, 16,* 165–170.
Wadsworth, G. W., Jr. (1937b). Temperament tests as personnel aids. *Personnel Journal, 15,* 341–346.
White, W. A. (1917). *The principles of mental hygiene.* New York: The Macmillan Company.
Whyte, W. H. Jr. (1956). *The organization man.* New York: Simon & Schuster.
Woodworth, R. S. (1917). *Personal data sheet.* Chicago: C. H. Stoelting Company.
Woodworth, R. S. (1919). Examination of emotional fitness for warfare. *Psychological Bulletin, 16,* 59–60.
Woodworth, R. S. (1932). Robert S. Woodworth. In C. Murchison (Ed.), *History of psychology in autobiography* (Vol. 2, pp. 359–380). Worchester, MA: Clark University Press.
Zenderland, L. (1998). *Measuring minds: Henry Herbert Goddard and the origins of American intelligence testing.* New York: Cambridge University Press.
Zickar, M. J. (2001). Using personality inventories to identify thugs and agitators: Applied psychology's contribution to the war against labor. *Journal of Vocational Behavior, 59,* 149–164.

Received September 13, 2005
Revision received May 4, 2008
Accepted June 4, 2008 ■

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

E-Mail Notification of Your Latest Issue Online!

Would you like to know when the next issue of your favorite APA journal will be available online? This service is now available to you. Sign up at http://notify.apa.org/ and you will be notified by e-mail when issues of interest to you become available!

View publication stats